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signal strength data and a propagation path slope estimate for each of the second plurality of antennas, wherein each of said calculated distances contains an error component which depends upon said propagation path slope estimate; and

- b) repeating step a) while varying the propagation path slope estimates to reduce said error components.

19. The method of claim 16 wherein said signal strengths are dependent, at least in part, on a cell propagation characteristic, and wherein said step of calculating the distances between the mobile station and each of a second plurality of antennas further comprises the steps of:

- a) calculating the distances between the mobile station and each of a second plurality of antennas using said signal strength data and estimated cell propagation characteristic values, wherein each of said calculated distances contains an error component which depends upon an estimated cell propagation characteristic value; and

- b) repeating step a) while varying the estimated cell propagation characteristic values to reduce said error components.

20. The method of claim 19 wherein said estimated cell propagation characteristic is propagation path slope.

21. The method of claim 19 wherein said estimated cell propagation characteristic is antenna pattern rolloff.

22. The method of claim 15 wherein said received GPS coordinates are the most recent GPS coordinates calculated by the GPS receiver/processor which are within a predetermined confidence level.

23. The method of claim 15 further comprising the step of notifying a user of the location of the mobile station.

24. The method of claim 15 wherein said mobile station is a mobile telephone.

25. The method of claim 15 wherein said mobile station is a mobile data device.

26. The method of claim 15 further comprising the step of: assigning a confidence level to said determined location based on said step of comparing.

27. An apparatus for locating a mobile station within the geographic serving area of a mobile communication system,

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wherein said mobile station is sending signals to and receiving signals from antennas located within the geographic serving area, and wherein said mobile station comprises a GPS receiver/processor, the apparatus comprising:

- a processor executing stored instructions for performing the functions of:

calculating the distances between the mobile station and each of a plurality of antennas using received signal strength data representing the signal strengths of the signals being received by the mobile station from the plurality of antennas;

calculating a first location area of the mobile station as the geographic coverage area of a serving cell cite;

calculating a second location area of the mobile station using said calculated distances; and

comparing the first and second location areas with received GPS coordinates representing a GPS location of the mobile station to determine the location of said mobile station.

28. The apparatus of claim 27 wherein said processor function of calculating a second location area further comprises the function of:

calculating the second location as the intersection area of a plurality of circles, each of said circles having a center at the location of one of said plurality of antennas and having a radius equal to the calculated distance of the mobile station from the antenna.

29. The apparatus of claim 27 wherein said received GPS coordinates are the most recent GPS coordinates which are within a predetermined confidence level.

30. The apparatus of claim 27 wherein said mobile station is a mobile telephone.

31. The apparatus of claim 27 wherein said mobile station is a mobile data device.

32. The apparatus of claim 27 wherein said processor further performs the function of:

assigning a confidence level to said determined location based on said function of comparing.

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